

CHARMED MESONS ($C = \pm 1$)

$D^+ = c\bar{d}$, $D^0 = c\bar{u}$, $\bar{D}^0 = \bar{c}u$, $D^- = \bar{c}d$, similarly for D^* 's

D^\pm

$$I(J^P) = \frac{1}{2}(0^-)$$

Mass $m = 1869.62 \pm 0.15$ MeV ($S = 1.1$)

Mean life $\tau = (1040 \pm 7) \times 10^{-15}$ s

$$c\tau = 311.8 \mu\text{m}$$

c-quark decays

$$\Gamma(c \rightarrow \ell^+ \text{anything})/\Gamma(c \rightarrow \text{anything}) = 0.096 \pm 0.004 \quad [a]$$

$$\Gamma(c \rightarrow D^*(2010)^+ \text{anything})/\Gamma(c \rightarrow \text{anything}) = 0.255 \pm 0.017$$

CP-violation decay-rate asymmetries

$$A_{CP}(\mu^\pm \nu) = (8 \pm 8)\%$$

$$A_{CP}(K_S^0 \pi^\pm) = (-0.41 \pm 0.09)\%$$

$$A_{CP}(K^\mp 2\pi^\pm) = (-0.1 \pm 1.0)\%$$

$$A_{CP}(K^\mp \pi^\pm \pi^\pm \pi^0) = (1.0 \pm 1.3)\%$$

$$A_{CP}(K_S^0 \pi^\pm \pi^0) = (0.3 \pm 0.9)\%$$

$$A_{CP}(K_S^0 \pi^\pm \pi^+ \pi^-) = (0.1 \pm 1.3)\%$$

$$A_{CP}(\pi^\pm \pi^0) = (2.9 \pm 2.9)\%$$

$$A_{CP}(\pi^\pm \eta) = (1.0 \pm 1.5)\% \quad (S = 1.4)$$

$$A_{CP}(\pi^\pm \eta'(958)) = (-0.5 \pm 1.2)\% \quad (S = 1.1)$$

$$A_{CP}(K_S^0 K^\pm) = (-0.23 \pm 0.31)\%$$

$$A_{CP}(K^+ K^- \pi^\pm) = (0.3 \pm 0.6)\%$$

$$A_{CP}(K^\pm K^{*0}) = (0.1 \pm 1.3)\%$$

$$A_{CP}(\phi \pi^\pm) = (0.42 \pm 0.28)\%$$

$$A_{CP}(K^\pm K_0^*(1430)^0) = (8^{+7}_{-6})\%$$

$$A_{CP}(K^\pm K_2^*(1430)^0) = (43^{+20}_{-26})\%$$

$$A_{CP}(K^\pm K_0^*(800)) = (-12^{+18}_{-13})\%$$

$$A_{CP}(a_0(1450)^0 \pi^\pm) = (-19^{+14}_{-16})\%$$

$$A_{CP}(\phi(1680) \pi^\pm) = (-9 \pm 26)\%$$

$$A_{CP}(\pi^+ \pi^- \pi^\pm) = (-2 \pm 4)\%$$

$$A_{CP}(K_S^0 K^\pm \pi^+ \pi^-) = (-4 \pm 7)\%$$

$$A_{CP}(K^\pm \pi^0) = (-4 \pm 11)\%$$

T-violation decay-rate asymmetry

$$A_T(K_S^0 K^\pm \pi^+ \pi^-) = (-12 \pm 11) \times 10^{-3} \quad [b]$$

D^+ form factors

$$f_+(0)|V_{cs}| \text{ in } \bar{K}^0 \ell^+ \nu_\ell = 0.707 \pm 0.013$$

$$r_1 \equiv a_1/a_0 \text{ in } \bar{K}^0 \ell^+ \nu_\ell = -1.7 \pm 0.5$$

$$r_2 \equiv a_2/a_0 \text{ in } \bar{K}^0 \ell^+ \nu_\ell = -14 \pm 11$$

$$f_+(0)|V_{cd}| \text{ in } \pi^0 \ell^+ \nu_\ell = 0.146 \pm 0.007$$

$$r_1 \equiv a_1/a_0 \text{ in } \pi^0 \ell^+ \nu_\ell = -1.4 \pm 0.9$$

$$r_2 \equiv a_2/a_0 \text{ in } \pi^0 \ell^+ \nu_\ell = -4 \pm 5$$

$$f_+(0)|V_{cd}| \text{ in } D^+ \rightarrow \eta e^+ \nu_e = 0.086 \pm 0.006$$

$$r_1 \equiv a_1/a_0 \text{ in } D^+ \rightarrow \eta e^+ \nu_e = -1.8 \pm 2.2$$

$$r_V \equiv V(0)/A_1(0) \text{ in } \bar{K}^*(892)^0 \ell^+ \nu_\ell = 1.51 \pm 0.07 \quad (S = 2.2)$$

$$r_2 \equiv A_2(0)/A_1(0) \text{ in } \bar{K}^*(892)^0 \ell^+ \nu_\ell = 0.807 \pm 0.025$$

$$r_3 \equiv A_3(0)/A_1(0) \text{ in } \bar{K}^*(892)^0 \ell^+ \nu_\ell = 0.0 \pm 0.4$$

$$\Gamma_L/\Gamma_T \text{ in } \bar{K}^*(892)^0 \ell^+ \nu_\ell = 1.13 \pm 0.08$$

$$\Gamma_+/ \Gamma_- \text{ in } \bar{K}^*(892)^0 \ell^+ \nu_\ell = 0.22 \pm 0.06 \quad (S = 1.6)$$

NODE=MXXX035

NODE=S031

NODE=S031M;DTYPE=M

NODE=S031T;DTYPE=T

NODE=S031CTA;DTYPE=C;OUR EVAL

CLUMP=C

NODE=S031B94;DTYPE=R;CLUMP=C

NODE=S031C3;DTYPE=R;CLUMP=C

CLUMP=V

NODE=S031A05;DTYPE=v;CLUMP=V

NODE=S031A5;DTYPE=v;CLUMP=V

NODE=S031A01;DTYPE=v;CLUMP=V

NODE=S031A02;DTYPE=v;CLUMP=V

NODE=S031A03;DTYPE=v;CLUMP=V

NODE=S031A04;DTYPE=v;CLUMP=V

NODE=S031A11;DTYPE=v;CLUMP=V

NODE=S031A12;DTYPE=v;CLUMP=V

NODE=S031A13;DTYPE=v;CLUMP=V

NODE=S031A6;DTYPE=v;CLUMP=V

NODE=S031A1;DTYPE=v;CLUMP=V

NODE=S031A2;DTYPE=v;CLUMP=V

NODE=S031A3;DTYPE=v;CLUMP=V

NODE=S031A06;DTYPE=v;CLUMP=V

NODE=S031A07;DTYPE=v;CLUMP=V

NODE=S031A08;DTYPE=v;CLUMP=V

NODE=S031A09;DTYPE=v;CLUMP=V

NODE=S031A10;DTYPE=v;CLUMP=V

NODE=S031A4;DTYPE=v;CLUMP=V

NODE=S031CPK;DTYPE=v;CLUMP=V

NODE=S031A14;DTYPE=v;CLUMP=V

CLUMP=T

NODE=S031TV0;DTYPE=t;CLUMP=T

CLUMP=F

NODE=S031FK0;DTYPE=f;CLUMP=F

NODE=S031FK1;DTYPE=f;CLUMP=F

NODE=S031FK2;DTYPE=f;CLUMP=F

NODE=S031FP0;DTYPE=f;CLUMP=F

NODE=S031FP1;DTYPE=f;CLUMP=F

NODE=S031FP2;DTYPE=f;CLUMP=F

NODE=S031FE0;DTYPE=f;CLUMP=F

NODE=S031FE1;DTYPE=f;CLUMP=F

NODE=S031FRV;DTYPE=f;CLUMP=F

NODE=S031FR2;DTYPE=f;CLUMP=F

NODE=S031FR3;DTYPE=f;CLUMP=F

NODE=S031GLT;DTYPE=f;CLUMP=F

NODE=S031GPM;DTYPE=f;CLUMP=F

Most decay modes (other than the semileptonic modes) that involve a neutral K meson are now given as K_S^0 modes, not as \bar{K}^0 modes. Nearly always it is a K_S^0 that is measured, and interference between Cabibbo-allowed and doubly Cabibbo-suppressed modes can invalidate the assumption that $2\Gamma(K_S^0) = \Gamma(\bar{K}^0)$.

NODE=S031215;NODE=S031

D⁺ DECAY MODES	Fraction (Γ_i/Γ)	Scale factor/ Confidence level	p (MeV/c)
Inclusive modes			
e^+ semileptonic	(16.07 ± 0.30) %	—	NODE=S031;CLUMP=A DESIG=7
μ^+ anything	(17.6 ± 3.2) %	—	DESIG=22
K^- anything	(25.7 ± 1.4) %	—	DESIG=8
\bar{K}^0 anything + K^0 anything	(61 ± 5) %	—	DESIG=9
K^+ anything	(5.9 ± 0.8) %	—	DESIG=10
$K^*(892)^-$ anything	(6 ± 5) %	—	DESIG=248
$\bar{K}^*(892)^0$ anything	(23 ± 5) %	—	DESIG=244
$K^*(892)^0$ anything	< 6.6 %	CL=90%	DESIG=245
η anything	(6.3 ± 0.7) %	—	DESIG=21
η' anything	(1.04 ± 0.18) %	—	DESIG=250
ϕ anything	(1.03 ± 0.12) %	—	DESIG=219
Leptonic and semileptonic modes			
$e^+ \nu_e$	< 8.8×10^{-6}	CL=90%	935 DESIG=6
$\mu^+ \nu_\mu$	(3.82 ± 0.33) $\times 10^{-4}$	—	932 DESIG=20
$\tau^+ \nu_\tau$	< 1.2×10^{-3}	CL=90%	91 DESIG=247
$\bar{K}^0 e^+ \nu_e$	(8.83 ± 0.22) %	—	869 DESIG=71
$\bar{K}^0 \mu^+ \nu_\mu$	(9.2 ± 0.6) %	—	865 DESIG=49
$K^- \pi^+ e^+ \nu_e$	(4.00 ± 0.10) %	—	864 DESIG=34
$\bar{K}^*(892)^0 e^+ \nu_e, \bar{K}^*(892)^0 \rightarrow K^- \pi^+$	(3.68 ± 0.10) %	—	722 DESIG=81;OUR EVAL
$(K^- \pi^+)_{S-wave} e^+ \nu_e$	(2.32 ± 0.10) $\times 10^{-3}$	—	— DESIG=270
$\bar{K}^*(1410)^0 e^+ \nu_e, \bar{K}^*(1410)^0 \rightarrow K^- \pi^+$	< 6 $\times 10^{-3}$	CL=90%	— DESIG=271
$\bar{K}_2^*(1430)^0 e^+ \nu_e, \bar{K}_2^*(1430)^0 \rightarrow K^- \pi^+$	< 5 $\times 10^{-4}$	CL=90%	— DESIG=272
$K^- \pi^+ e^+ \nu_e$ nonresonant	< 7 $\times 10^{-3}$	CL=90%	864 DESIG=45
$K^- \pi^+ \mu^+ \nu_\mu$	(3.8 ± 0.4) %	—	851 DESIG=184
$\bar{K}^*(892)^0 \mu^+ \nu_\mu, \bar{K}^*(892)^0 \rightarrow K^- \pi^+$	(3.52 ± 0.10) %	—	717 DESIG=185;OUR EVAL
$K^- \pi^+ \mu^+ \nu_\mu$ nonresonant	(2.0 ± 0.5) $\times 10^{-3}$	—	851 DESIG=186
$K^- \pi^+ \pi^0 \mu^+ \nu_\mu$	< 1.6 $\times 10^{-3}$	CL=90%	825 DESIG=187
$\pi^0 e^+ \nu_e$	(4.05 ± 0.18) $\times 10^{-3}$	—	930 DESIG=239
$\eta e^+ \nu_e$	(1.14 ± 0.10) $\times 10^{-3}$	—	855 DESIG=265
$\rho^0 e^+ \nu_e$	(2.2 ± 0.4) $\times 10^{-3}$	—	774 DESIG=154
$\rho^0 \mu^+ \nu_\mu$	(2.4 ± 0.4) $\times 10^{-3}$	—	770 DESIG=188
$\omega e^+ \nu_e$	(1.6 ± 0.7) $\times 10^{-3}$	—	771 DESIG=240
$\eta'(958) e^+ \nu_e$	(2.2 ± 0.5) $\times 10^{-4}$	—	689 DESIG=266
$\phi e^+ \nu_e$	< 9 $\times 10^{-5}$	CL=90%	657 DESIG=124
Fractions of some of the following modes with resonances have already appeared above as submodes of particular charged-particle modes.			
$\bar{K}^*(892)^0 e^+ \nu_e$	(5.52 ± 0.15) %	—	CLUMP=C;NODE=S031 DESIG=44
$\bar{K}^*(892)^0 \mu^+ \nu_\mu$	(5.28 ± 0.15) %	—	DESIG=179
$\bar{K}_0^*(1430)^0 \mu^+ \nu_\mu$	< 2.4 $\times 10^{-4}$	—	380 DESIG=242
$\bar{K}^*(1680)^0 \mu^+ \nu_\mu$	< 1.5 $\times 10^{-3}$	—	105 DESIG=243

Hadronic modes with a \bar{K} or $\bar{K}KK$

$K_S^0\pi^+$	(1.47±0.07) %	S=2.0	863	NODE=S031;CLUMP=D DESIG=2
$K_L^0\pi^+$	(1.46±0.05) %		863	DESIG=256
$K^-2\pi^+$	[c] (9.13±0.19) %		846	DESIG=1
$(K^-\pi^+)_{S-\text{wave}}\pi^+$	(7.32±0.19) %		846	DESIG=251
$\bar{K}_0^*(1430)^0\pi^+,$	[d] (1.21±0.06) %		382	DESIG=191
$\bar{K}_0^*(1430)^0 \rightarrow K^-\pi^+$				
$\bar{K}^*(892)^0\pi^+,$	(1.01±0.11) %		714	DESIG=83
$\bar{K}^*(892)^0 \rightarrow K^-\pi^+$				
$\bar{K}^*(1410)^0\pi^+, \bar{K}^{*0} \rightarrow$	not seen		381	DESIG=147;OUR EVAL
$K^-\pi^+$				
$\bar{K}_2^*(1430)^0\pi^+,$	[d] (2.2 ± 0.7) × 10 ⁻⁴		371	DESIG=232
$\bar{K}_2^*(1430)^0 \rightarrow K^-\pi^+$				
$\bar{K}^*(1680)^0\pi^+,$	[d] (2.1 ± 1.1) × 10 ⁻⁴		58	DESIG=192
$\bar{K}^*(1680)^0 \rightarrow K^-\pi^+$				
$K^-(2\pi^+)_I=2$	(1.41±0.26) %		—	DESIG=263
$K_S^0\pi^+\pi^0$	[c] (6.99±0.27) %		845	DESIG=12
$K_S^0\rho^+$	(4.8 ± 1.0) %		677	DESIG=18
$\bar{K}^*(892)^0\pi^+,$	(1.3 ± 0.6) %		714	DESIG=82
$\bar{K}^*(892)^0 \rightarrow K_S^0\pi^0$				
$K_S^0\pi^+\pi^0$ nonresonant	(9 ± 7) × 10 ⁻³		845	DESIG=27
$K^-2\pi^+\pi^0$	[e] (5.99±0.18) %		816	DESIG=17
$K_S^02\pi^+\pi^-$	[e] (3.12±0.11) %		814	DESIG=13
$K^-3\pi^+\pi^-$	[c] (5.6 ± 0.5) × 10 ⁻³	S=1.1	772	DESIG=14
$\bar{K}^*(892)^02\pi^+\pi^-,$	(1.2 ± 0.4) × 10 ⁻³		645	DESIG=57
$\bar{K}^*(892)^0 \rightarrow K^-\pi^+$				
$\bar{K}^*(892)^0\rho^0\pi^+,$	(2.2 ± 0.4) × 10 ⁻³		239	DESIG=58
$\bar{K}^*(892)^0 \rightarrow K^-\pi^+$				
$\bar{K}^*(892)^0a_1(1260)^+$	[f] (9.0 ± 1.8) × 10 ⁻³		†	DESIG=233
$K^-\rho^02\pi^+$	(1.68±0.27) × 10 ⁻³		524	DESIG=206
$K^-3\pi^+\pi^-$ nonresonant	(3.9 ± 2.9) × 10 ⁻⁴		772	DESIG=207
$K^+2K_S^0$	(4.5 ± 2.0) × 10 ⁻³		545	DESIG=59
$K^+K^-K_S^0\pi^+$	(2.4 ± 0.6) × 10 ⁻⁴		436	DESIG=227

Pionic modes

$\pi^+\pi^0$	(1.19±0.06) × 10 ⁻³		925	NODE=S031;CLUMP=F DESIG=15
$2\pi^+\pi^-$	(3.18±0.18) × 10 ⁻³		909	DESIG=3
$\rho^0\pi^+$	(8.1 ± 1.5) × 10 ⁻⁴		767	DESIG=47
$\pi^+(\pi^+\pi^-)_{S-\text{wave}}$	(1.78±0.16) × 10 ⁻³		909	DESIG=237
$\sigma\pi^+, \sigma \rightarrow \pi^+\pi^-$	(1.34±0.12) × 10 ⁻³		—	DESIG=221
$f_0(980)\pi^+,$	(1.52±0.33) × 10 ⁻⁴		669	DESIG=222
$f_0(980) \rightarrow \pi^+\pi^-$				
$f_0(1370)\pi^+,$	(8 ± 4) × 10 ⁻⁵		—	DESIG=224
$f_0(1370) \rightarrow \pi^+\pi^-$				
$f_2(1270)\pi^+,$	(4.9 ± 0.9) × 10 ⁻⁴		485	DESIG=228
$f_2(1270) \rightarrow \pi^+\pi^-$				
$\rho(1450)^0\pi^+,$	< 8 × 10 ⁻⁵	CL=95%	338	DESIG=225
$\rho(1450)^0 \rightarrow \pi^+\pi^-$				
$f_0(1500)\pi^+,$	(1.1 ± 0.4) × 10 ⁻⁴		—	DESIG=252
$f_0(1500) \rightarrow \pi^+\pi^-$				
$f_0(1710)\pi^+,$	< 5 × 10 ⁻⁵	CL=95%	—	DESIG=253
$f_0(1710) \rightarrow \pi^+\pi^-$				
$f_0(1790)\pi^+,$	< 6 × 10 ⁻⁵	CL=95%	—	DESIG=254
$f_0(1790) \rightarrow \pi^+\pi^-$				
$(\pi^+\pi^+)_{S-\text{wave}}\pi^-$	< 1.2 × 10 ⁻⁴	CL=95%	909	DESIG=255
$2\pi^+\pi^-$ nonresonant	< 1.1 × 10 ⁻⁴	CL=95%	909	DESIG=46
$\pi^+2\pi^0$	(4.6 ± 0.4) × 10 ⁻³		910	DESIG=246
$2\pi^+\pi^-\pi^0$	(1.13±0.08) %		883	DESIG=50
$\eta\pi^+, \eta \rightarrow \pi^+\pi^-\pi^0$	(8.0 ± 0.5) × 10 ⁻⁴		848	DESIG=84;OUR EVAL
$\omega\pi^+, \omega \rightarrow \pi^+\pi^-\pi^0$	< 3 × 10 ⁻⁴	CL=90%	763	DESIG=85;OUR EVAL
$3\pi^+2\pi^-$	(1.61±0.16) × 10 ⁻³		845	DESIG=48

Fractions of some of the following modes with resonances have already appeared above as submodes of particular charged-particle modes.

CLUMP=G;NODE=S031

$\eta\pi^+$	$(3.53 \pm 0.21) \times 10^{-3}$	848	DESIG=51
$\eta\pi^+\pi^0$	$(1.38 \pm 0.35) \times 10^{-3}$	830	DESIG=257
$\omega\pi^+$	$< 3.4 \times 10^{-4}$	CL=90%	764
$\eta'(958)\pi^+$	$(4.67 \pm 0.29) \times 10^{-3}$	681	DESIG=90
$\eta'(958)\pi^+\pi^0$	$(1.6 \pm 0.5) \times 10^{-3}$	654	DESIG=258

Hadronic modes with a $K\bar{K}$ pair

$K^+ K_S^0$	$(2.83 \pm 0.16) \times 10^{-3}$	S=2.2	793	NODE=S031;CLUMP=H
$K^+ K^- \pi^+$	[c] $(9.54 \pm 0.26) \times 10^{-3}$	S=1.1	744	DESIG=4
$\phi\pi^+, \phi \rightarrow K^+ K^-$	$(2.65^{+0.08}_{-0.09}) \times 10^{-3}$		647	DESIG=89
$K^+ \bar{K}^*(892)^0,$ $\bar{K}^*(892)^0 \rightarrow K^-\pi^+$	$(2.45^{+0.09}_{-0.14}) \times 10^{-3}$		613	DESIG=86
$K^+ \bar{K}_0^*(1430)^0,$ $\bar{K}_0^*(1430)^0 \rightarrow K^-\pi^+$	$(1.79 \pm 0.34) \times 10^{-3}$		—	DESIG=238
$K^+ \bar{K}_2^*(1430)^0, \bar{K}_2^* \rightarrow K^-\pi^+$	$(1.6^{+1.2}_{-0.8}) \times 10^{-4}$		—	DESIG=259
$K^+ \bar{K}_0^*(800), \bar{K}_0^* \rightarrow K^-\pi^+$	$(6.7^{+3.4}_{-2.1}) \times 10^{-4}$		—	DESIG=260
$a_0(1450)^0 \pi^+, a_0^0 \rightarrow K^+ K^-$	$(4.4^{+7.0}_{-1.8}) \times 10^{-4}$		—	DESIG=261
$\phi(1680)\pi^+, \phi \rightarrow K^+ K^-$	$(4.9^{+4.0}_{-1.9}) \times 10^{-5}$		—	DESIG=262
$K^+ K^- \pi^+$ nonresonant	not seen		744	DESIG=26;OUR EVAL
$K^+ K_S^0 \pi^+ \pi^-$	$(1.75 \pm 0.18) \times 10^{-3}$		678	DESIG=134
$K_S^0 K^- 2\pi^+$	$(2.40 \pm 0.18) \times 10^{-3}$		678	DESIG=130
$K^+ K^- 2\pi^+ \pi^-$	$(2.2 \pm 1.2) \times 10^{-4}$		600	DESIG=88

A few poorly measured branching fractions:

$\phi\pi^+\pi^0$	$(2.3 \pm 1.0) \%$		619	CLUMP=I;NODE=S031
$\phi\rho^+$	$< 1.5 \%$	CL=90%	260	DESIG=93
$K^+ K^- \pi^+ \pi^0$ non- ϕ	$(1.5^{+0.7}_{-0.6}) \%$		682	DESIG=54
$K^*(892)^+ K_S^0$	$(1.6 \pm 0.7) \%$		612	DESIG=197

Doubly Cabibbo-suppressed modes

$K^+ \pi^0$	$(1.83 \pm 0.26) \times 10^{-4}$	S=1.4	864	NODE=S031;CLUMP=K
$K^+ \eta$	$(1.08 \pm 0.17) \times 10^{-4}$		776	DESIG=268
$K^+ \eta'(958)$	$(1.76 \pm 0.22) \times 10^{-4}$		571	DESIG=269
$K^+ \pi^+ \pi^-$	$(5.27 \pm 0.23) \times 10^{-4}$		846	DESIG=5
$K^+ \rho^0$	$(2.0 \pm 0.5) \times 10^{-4}$		679	DESIG=204
$K^*(892)^0 \pi^+, K^*(892)^0 \rightarrow K^+ \pi^-$	$(2.5 \pm 0.4) \times 10^{-4}$		714	DESIG=205
$K^+ f_0(980), f_0(980) \rightarrow \pi^+ \pi^-$	$(4.7 \pm 2.8) \times 10^{-5}$		—	DESIG=235
$K_2^*(1430)^0 \pi^+, K_2^*(1430)^0 \rightarrow \pi^+ \pi^-$	$(4.2 \pm 2.9) \times 10^{-5}$		—	DESIG=236
$K^+ \pi^+ \pi^-$ nonresonant	not seen		846	DESIG=211;OUR EVAL
$2K^+ K^-$	$(8.7 \pm 2.0) \times 10^{-5}$		550	DESIG=181

$\Delta C = 1$ weak neutral current (C1) modes, or

Lepton Family number (LF) or Lepton number (L) violating modes

$\pi^+ e^+ e^-$	C1	$< 1.1 \times 10^{-6}$	CL=90%	930	DESIG=41
$\pi^+ \phi, \phi \rightarrow e^+ e^-$	[g]	$(1.7^{+1.4}_{-0.9}) \times 10^{-6}$		—	DESIG=241
$\pi^+ \mu^+ \mu^-$	C1	$< 3.9 \times 10^{-6}$	CL=90%	918	DESIG=42
$\pi^+ \phi, \phi \rightarrow \mu^+ \mu^-$	[g]	$(1.8 \pm 0.8) \times 10^{-6}$		—	DESIG=264
$\rho^+ \mu^+ \mu^-$	C1	$< 5.6 \times 10^{-4}$	CL=90%	757	DESIG=198
$K^+ e^+ e^-$	[h]	$< 1.0 \times 10^{-6}$	CL=90%	870	DESIG=113
$K^+ \mu^+ \mu^-$	[h]	$< 4.3 \times 10^{-6}$	CL=90%	856	DESIG=114
$\pi^+ e^+ \mu^-$	LF	$< 2.9 \times 10^{-6}$	CL=90%	927	DESIG=110
$\pi^+ e^- \mu^+$	LF	$< 3.6 \times 10^{-6}$	CL=90%	927	DESIG=111

$K^+ e^+ \mu^-$	LF	< 1.2	$\times 10^{-6}$	CL=90%	866	DESIG=115
$K^+ e^- \mu^+$	LF	< 2.8	$\times 10^{-6}$	CL=90%	866	DESIG=116
$\pi^- 2e^+$	L	< 1.1	$\times 10^{-6}$	CL=90%	930	DESIG=117
$\pi^- 2\mu^+$	L	< 2.0	$\times 10^{-6}$	CL=90%	918	DESIG=118
$\pi^- e^+ \mu^+$	L	< 2.0	$\times 10^{-6}$	CL=90%	927	DESIG=119
$\rho^- 2\mu^+$	L	< 5.6	$\times 10^{-4}$	CL=90%	757	DESIG=199
$K^- 2e^+$	L	< 9	$\times 10^{-7}$	CL=90%	870	DESIG=120
$K^- 2\mu^+$	L	< 1.0	$\times 10^{-5}$	CL=90%	856	DESIG=121
$K^- e^+ \mu^+$	L	< 1.9	$\times 10^{-6}$	CL=90%	866	DESIG=122
$K^*(892)^- 2\mu^+$	L	< 8.5	$\times 10^{-4}$	CL=90%	703	DESIG=200

D⁰

$$I(J^P) = \frac{1}{2}(0^-)$$

Mass $m = 1864.86 \pm 0.13$ MeV

$$m_{D^\pm} - m_{D^0} = 4.76 \pm 0.10 \text{ MeV} \quad (S = 1.1)$$

Mean life $\tau = (410.1 \pm 1.5) \times 10^{-15}$ s

$$c\tau = 122.9 \text{ }\mu\text{m}$$

$$|m_{D_1^0} - m_{D_2^0}| = (1.18^{+0.43}_{-0.47}) \times 10^{10} \text{ }\hbar \text{ s}^{-1}$$

$$(\Gamma_{D_1^0} - \Gamma_{D_2^0})/\Gamma = 2y = (1.43 \pm 0.19) \times 10^{-2}$$

$$|\mathbf{q}/\mathbf{p}| = 0.67^{+0.18}_{-0.14}$$

$$\Lambda_\Gamma = (-0.22 \pm 1.61) \times 10^{-3}$$

$$K^+ \pi^- \text{ relative strong phase: } \cos \delta = 0.81^{+0.23}_{-0.19}$$

$$K^- \pi^+ \pi^0 \text{ coherence factor } R_{K\pi\pi^0} = 0.78^{+0.11}_{-0.25}$$

$$K^- \pi^+ \pi^0 \text{ average relative strong phase } \delta^{K\pi\pi^0} = (239^{+32}_{-28})^\circ$$

$$K^- \pi^- 2\pi^+ \text{ coherence factor } R_{K3\pi} = 0.36^{+0.24}_{-0.30}$$

$$K^- \pi^- 2\pi^+ \text{ average relative strong phase } \delta^{K3\pi} = (118^{+60}_{-50})^\circ$$

$$K_S^0 K^+ \pi^- \text{ coherence factor } R_{K_S^0 K\pi} = 0.73 \pm 0.08$$

$$K_S^0 K^+ \pi^- \text{ average relative strong phase } \delta^{K_S^0 K\pi} = (8 \pm 15)^\circ$$

$$K^* K \text{ coherence factor } R_{K^* K} = 1.00 \pm 0.16$$

$$K^* K \text{ average relative strong phase } \delta^{K^* K} = (26 \pm 16)^\circ$$

CP-violation decay-rate asymmetries (labeled by the D⁰ decay)

$$A_{CP}(K^+ K^-) = (-0.21 \pm 0.17)\%$$

$$A_{CP}(2K_S^0) = (-23 \pm 19)\%$$

$$A_{CP}(\pi^+ \pi^-) = (0.22 \pm 0.21)\%$$

$$A_{CP}(2\pi^0) = (0 \pm 5)\%$$

$$A_{CP}(\pi^+ \pi^- \pi^0) = (0.3 \pm 0.4)\%$$

$$A_{CP}(\rho(770)^+ \pi^- \rightarrow \pi^+ \pi^- \pi^0) = (1.2 \pm 0.9)\% [i]$$

$$A_{CP}(\rho(770)^0 \pi^0 \rightarrow \pi^+ \pi^- \pi^0) = (-3.1 \pm 3.0)\% [i]$$

$$A_{CP}(\rho(770)^- \pi^+ \rightarrow \pi^+ \pi^- \pi^0) = (-1.0 \pm 1.7)\% [i]$$

$$A_{CP}(\rho(1450)^+ \pi^- \rightarrow \pi^+ \pi^- \pi^0) = (0 \pm 70)\% [i]$$

$$A_{CP}(\rho(1450)^0 \pi^0 \rightarrow \pi^+ \pi^- \pi^0) = (-20 \pm 40)\% [i]$$

$$A_{CP}(\rho(1450)^- \pi^+ \rightarrow \pi^+ \pi^- \pi^0) = (6 \pm 9)\% [i]$$

$$A_{CP}(\rho(1700)^+ \pi^- \rightarrow \pi^+ \pi^- \pi^0) = (-5 \pm 14)\% [i]$$

$$A_{CP}(\rho(1700)^0 \pi^0 \rightarrow \pi^+ \pi^- \pi^0) = (13 \pm 9)\% [i]$$

$$A_{CP}(\rho(1700)^- \pi^+ \rightarrow \pi^+ \pi^- \pi^0) = (8 \pm 11)\% [i]$$

$$A_{CP}(f_0(980) \pi^0 \rightarrow \pi^+ \pi^- \pi^0) = (0 \pm 35)\% [i]$$

$$A_{CP}(f_0(1370) \pi^0 \rightarrow \pi^+ \pi^- \pi^0) = (25 \pm 18)\% [i]$$

$$A_{CP}(f_0(1500) \pi^0 \rightarrow \pi^+ \pi^- \pi^0) = (0 \pm 18)\% [i]$$

$$A_{CP}(f_0(1710) \pi^0 \rightarrow \pi^+ \pi^- \pi^0) = (0 \pm 24)\% [i]$$

$$A_{CP}(f_2(1270) \pi^0 \rightarrow \pi^+ \pi^- \pi^0) = (-4 \pm 6)\% [i]$$

$$A_{CP}(\sigma(400) \pi^0 \rightarrow \pi^+ \pi^- \pi^0) = (6 \pm 8)\% [i]$$

$$A_{CP}(\text{nonresonant } \pi^+ \pi^- \pi^0) = (-13 \pm 23)\% [i]$$

$$A_{CP}(K^+ K^- \pi^0) = (-1.0 \pm 1.7)\%$$

NODE=S032

NODE=S032M;DTYPE=M

NODE=S032DM;DTYPE=D

NODE=S032T;DTYPE=T

NODE=S032CTA;DTYPE=C;OUR EVAL

NODE=S032D;DTYPE=D;OUR EVAL

NODE=S032DT;DTYPE=Y;OUR EVAL

NODE=S032QP;DTYPE=Y;OUR EVAL

NODE=S032AG;DTYPE=Y;OUR EVAL

NODE=S032DKP;DTYPE=Y

NODE=S032CF1;DTYPE=Y

NODE=S032SP1;DTYPE=Y

NODE=S032CF2;DTYPE=Y

NODE=S032SP2;DTYPE=Y

NODE=S032CF3;DTYPE=Y

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NODE=S032A39;DTYPE=v;CLUMP=V

NODE=S032A40;DTYPE=v;CLUMP=V

NODE=S032A41;DTYPE=v;CLUMP=V

$A_{CP}(K^*(892)^+ K^- \rightarrow K^+ K^- \pi^0) = (-0.9 \pm 1.3)\% [i]$
 $A_{CP}(K^*(1410)^+ K^- \rightarrow K^+ K^- \pi^0) = (-21 \pm 24)\% [i]$
 $A_{CP}((K^+ \pi^0)_{S-wave} K^- \rightarrow K^+ K^- \pi^0) = (7 \pm 15)\% [i]$
 $A_{CP}(\phi(1020) \pi^0 \rightarrow K^+ K^- \pi^0) = (1.1 \pm 2.2)\% [i]$
 $A_{CP}(f_0(980) \pi^0 \rightarrow K^+ K^- \pi^0) = (-3 \pm 19)\% [i]$
 $A_{CP}(a_0(980)^0 \pi^0 \rightarrow K^+ K^- \pi^0) = (-5 \pm 16)\% [i]$
 $A_{CP}(f'_2(1525) \pi^0 \rightarrow K^+ K^- \pi^0) = (0 \pm 160)\% [i]$
 $A_{CP}(K^*(892)^- K^+ \rightarrow K^+ K^- \pi^0) = (-5 \pm 4)\% [i]$
 $A_{CP}(K^*(1410)^- K^+ \rightarrow K^+ K^- \pi^0) = (-17 \pm 29)\% [i]$
 $A_{CP}((K^- \pi^0)_{S-wave} K^+ \rightarrow K^+ K^- \pi^0) = (-10 \pm 40)\% [i]$
 $A_{CP}(K_S^0 \pi^0) = (-0.27 \pm 0.21)\%$
 $A_{CP}(K_S^0 \eta) = (0.5 \pm 0.5)\%$
 $A_{CP}(K_S^0 \eta') = (1.0 \pm 0.7)\%$
 $A_{CP}(K_S^0 \phi) = (-3 \pm 9)\%$
 $A_{CP}(K^- \pi^+) = (0.1 \pm 0.7)\%$
 $A_{CP}(K^+ \pi^-) = (2.2 \pm 3.2)\%$
 $A_{CP}(K^- \pi^+ \pi^0) = (0.2 \pm 0.9)\%$
 $A_{CP}(K^+ \pi^- \pi^0) = (0 \pm 5)\%$
 $A_{CP}(K_S^0 \pi^+ \pi^-) = (-0.1 \pm 0.8)\%$
 $A_{CP}(K^*(892)^- \pi^+ \rightarrow K_S^0 \pi^+ \pi^-) = (0.4 \pm 0.5)\%$
 $A_{CP}(K^*(892)^+ \pi^- \rightarrow K_S^0 \pi^+ \pi^-) = (1 \pm 6)\%$
 $A_{CP}(\bar{K}^0 \rho^0 \rightarrow K_S^0 \pi^+ \pi^-) = (-0.1 \pm 0.5)\%$
 $A_{CP}(\bar{K}^0 \omega \rightarrow K_S^0 \pi^+ \pi^-) = (-13 \pm 7)\%$
 $A_{CP}(\bar{K}^0 f_0(980) \rightarrow K_S^0 \pi^+ \pi^-) = (-0.4 \pm 2.7)\%$
 $A_{CP}(\bar{K}^0 f_2(1270) \rightarrow K_S^0 \pi^+ \pi^-) = (-4 \pm 5)\%$
 $A_{CP}(\bar{K}^0 f_0(1370) \rightarrow K_S^0 \pi^+ \pi^-) = (-1 \pm 9)\%$
 $A_{CP}(\bar{K}^0 \rho^0(1450) \rightarrow K_S^0 \pi^+ \pi^-) = (-4 \pm 10)\%$
 $A_{CP}(\bar{K}^0 f_0(600) \rightarrow K_S^0 \pi^+ \pi^-) = (-3 \pm 5)\%$
 $A_{CP}(\bar{K}^0 f_2(1270) \rightarrow K_S^0 \pi^+ \pi^-) = (-7 \pm 8)\%$
 $A_{CP}(K^*(1410)^- \pi^+ \rightarrow K_S^0 \pi^+ \pi^-) = (-2 \pm 9)\%$
 $A_{CP}(K_0^*(1430)^- \pi^+ \rightarrow K_S^0 \pi^+ \pi^-) = (4 \pm 4)\%$
 $A_{CP}(K_0^*(1430)^+ \pi^- \rightarrow K_S^0 \pi^+ \pi^-) = (12 \pm 15)\%$
 $A_{CP}(K_2^*(1430)^- \pi^+ \rightarrow K_S^0 \pi^+ \pi^-) = (3 \pm 6)\%$
 $A_{CP}(K_2^*(1430)^+ \pi^- \rightarrow K_S^0 \pi^+ \pi^-) = (-10 \pm 32)\%$
 $A_{CP}(K^*(1680)^- \pi^+ \rightarrow K_S^0 \pi^+ \pi^-)$
 $A_{CP}(K^- \pi^+ \pi^+ \pi^-) = (0.7 \pm 1.0)\%$
 $A_{CP}(K^+ \pi^- \pi^+ \pi^-) = (-2 \pm 4)\%$
 $A_{CP}(K^+ K^- \pi^+ \pi^-) = (-8 \pm 7)\%$
 $A_{CP}(K_1^*(1270)^+ K^- \rightarrow K^{*0} \pi^+ K^-) = (-1 \pm 10)\%$
 $A_{CP}(K_1^*(1270)^- K^+ \rightarrow \bar{K}^{*0} \pi^- K^+) = (-10 \pm 32)\%$
 $A_{CP}(K_1^*(1270)^+ K^- \rightarrow \rho^0 K^+ K^-) = (-7 \pm 17)\%$
 $A_{CP}(K_1^*(1270)^- K^+ \rightarrow \rho^0 K^- K^+) = (10 \pm 13)\%$
 $A_{CP}(K^*(1410)^+ K^- \rightarrow K^{*0} \pi^+ K^-) = (-20 \pm 17)\%$
 $A_{CP}(K^*(1410)^- K^+ \rightarrow \bar{K}^{*0} \pi^- K^+) = (-1 \pm 14)\%$
 $A_{CP}(K^{*0} \bar{K}^{*0} S\text{-wave}) = (10 \pm 14)\%$
 $A_{CP}(\phi \rho^0 S\text{-wave}) = (-3 \pm 5)\%$
 $A_{CP}(\phi \rho^0 D\text{-wave}) = (-37 \pm 19)\%$
 $A_{CP}(\phi(\pi^+ \pi^-)_{S-wave}) = (-9 \pm 10)\%$
 $A_{CP}((K^- \pi^+)_{P-wave} (K^+ \pi^-)_{S-wave}) = (3 \pm 11)\%$

CP-violation asymmetry difference

$$\Delta A_{CP} = A_{CP}(K^+ K^-) - A_{CP}(\pi^+ \pi^-) = (-0.68 \pm 0.16)\%$$

T-violation decay-rate asymmetry

$$A_T(K^+ K^- \pi^+ \pi^-) = (1 \pm 7) \times 10^{-3} [b]$$

NODE=S032A42;DTYPE=v;CLUMP=V
 NODE=S032A43;DTYPE=v;CLUMP=V
 NODE=S032A44;DTYPE=v;CLUMP=V
 NODE=S032A45;DTYPE=v;CLUMP=V
 NODE=S032A46;DTYPE=v;CLUMP=V
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 NODE=S032A68;DTYPE=v;CLUMP=V
 NODE=S032A69;DTYPE=v;CLUMP=V
 NODE=S032A70;DTYPE=v;CLUMP=V
 CLUMP=K
 NODE=S032DCP;DTYPE=v;CLUMP=K
 CLUMP=T
 NODE=S032TV0;DTYPE=t;CLUMP=T

CPT-violation decay-rate asymmetry

$$A_{CPT}(K^\mp\pi^\pm) = 0.008 \pm 0.008$$

Form factors

$$\begin{aligned} r_V &\equiv V(0)/A_1(0) \text{ in } D^0 \rightarrow K^*(892)^-\ell^+\nu_\ell = 1.7 \pm 0.8 \\ r_2 &\equiv A_2(0)/A_1(0) \text{ in } D^0 \rightarrow K^*(892)^-\ell^+\nu_\ell = 0.9 \pm 0.4 \\ f_+(0) \text{ in } D^0 \rightarrow K^-\ell^+\nu_\ell &= 0.727 \pm 0.011 \\ f_+(0)|V_{cs}| \text{ in } D^0 \rightarrow K^-\ell^+\nu_\ell &= 0.726 \pm 0.009 \\ r_1 \equiv a_1/a_0 \text{ in } D^0 \rightarrow K^-\ell^+\nu_\ell &= -2.65 \pm 0.35 \\ r_2 \equiv a_1/a_0 \text{ in } D^0 \rightarrow K^-\ell^+\nu_\ell &= 13 \pm 9 \\ f_+(0)|V_{cd}| \text{ in } D^0 \rightarrow \pi^-\ell^+\nu_\ell &= 0.152 \pm 0.005 \\ r_1 \equiv a_1/a_0 \text{ in } D^0 \rightarrow \pi^-\ell^+\nu_\ell &= -2.8 \pm 0.5 \\ r_2 \equiv a_1/a_0 \text{ in } D^0 \rightarrow \pi^-\ell^+\nu_\ell &= 6 \pm 3.0 \end{aligned}$$

Most decay modes (other than the semileptonic modes) that involve a neutral K meson are now given as K_S^0 modes, not as \bar{K}^0 modes. Nearly always it is a K_S^0 that is measured, and interference between Cabibbo-allowed and doubly Cabibbo-suppressed modes can invalidate the assumption that $2\Gamma(K_S^0) = \Gamma(\bar{K}^0)$.

D^0 DECAY MODES	Fraction (Γ_i/Γ)	Scale factor/ Confidence leve(MeV/c)	<i>p</i>	
Topological modes				
0-prongs	[j] (15 ± 6) %	—	NODE=S032;CLUMP=P DESIG=332	
2-prongs	(70 ± 6) %	—	DESIG=333	
4-prongs	[k] (14.5 ± 0.5) %	—	DESIG=334	
6-prongs	[l] (6.4 ± 1.3) × 10 ⁻⁴	—	DESIG=335	
Inclusive modes				
e^+ anything	[n] (6.49 ± 0.11) %	—	NODE=S032;CLUMP=A DESIG=10	
μ^+ anything	(6.7 ± 0.6) %	—	DESIG=27	
K^- anything	(54.7 ± 2.8) %	S=1.3	DESIG=11	
\bar{K}^0 anything + K^0 anything	(47 ± 4) %	—	DESIG=13	
K^+ anything	(3.4 ± 0.4) %	—	DESIG=12	
$K^*(892)^-$ anything	(15 ± 9) %	—	DESIG=340	
$\bar{K}^*(892)^0$ anything	(9 ± 4) %	—	DESIG=312	
$K^*(892)^+$ anything	< 3.6 %	CL=90%	DESIG=341	
$K^*(892)^0$ anything	(2.8 ± 1.3) %	—	DESIG=313	
η anything	(9.5 ± 0.9) %	—	DESIG=21	
η' anything	(2.48 ± 0.27) %	—	DESIG=342	
ϕ anything	(1.05 ± 0.11) %	—	DESIG=249	
Semileptonic modes				
$K^- e^+ \nu_e$	(3.55 ± 0.05) %	S=1.2	NODE=S032;CLUMP=B DESIG=46	
$K^- \mu^+ \nu_\mu$	(3.31 ± 0.13) %	864	DESIG=77	
$K^*(892)^- e^+ \nu_e$	(2.16 ± 0.16) %	719	DESIG=129	
$K^*(892)^- \mu^+ \nu_\mu$	(1.91 ± 0.24) %	714	DESIG=307	
$K^- \pi^0 e^+ \nu_e$	(1.6 ± 1.3) %	861	DESIG=127	
$\bar{K}^0 \pi^- e^+ \nu_e$	(2.7 ± 0.9) %	860	DESIG=128	
$K^- \pi^+ \pi^- e^+ \nu_e$	(2.8 ± 1.4) × 10 ⁻⁴	843	DESIG=360	
$K_1(1270)^- e^+ \nu_e$	(7.6 ± 4.0) × 10 ⁻⁴	498	DESIG=361	
$K^- \pi^+ \pi^- \mu^+ \nu_\mu$	< 1.2 × 10 ⁻³	821	DESIG=183	
$(\bar{K}^*(892)\pi)^- \mu^+ \nu_\mu$	< 1.4 × 10 ⁻³	692	DESIG=184	
$\pi^- e^+ \nu_e$	(2.89 ± 0.08) × 10 ⁻³	S=1.1	927	DESIG=49
$\pi^- \mu^+ \nu_\mu$	(2.37 ± 0.24) × 10 ⁻³	924	DESIG=308	
$\rho^- e^+ \nu_e$	(1.9 ± 0.4) × 10 ⁻³	771	DESIG=320	

Hadronic modes with one \bar{K}					NODE=S032;CLUMP=C
$K^- \pi^+$	(3.88 \pm 0.05) %	S=1.1	861	DESIG=1	
$K^+ \pi^-$	(1.37 \pm 0.06) $\times 10^{-4}$		861	DESIG=404	
$K_S^0 \pi^0$	(1.19 \pm 0.04) %		860	DESIG=9	
$K_L^0 \pi^0$	(10.0 \pm 0.7) $\times 10^{-3}$		860	DESIG=363	
$K_S^0 \pi^+ \pi^-$	[c] (2.83 \pm 0.20) %	S=1.1	842	DESIG=3	
$K_S^0 \rho^0$	(6.3 \pm 0.7) $\times 10^{-3}$		674	DESIG=17	
$K_S^0 \omega, \omega \rightarrow \pi^+ \pi^-$	(2.1 \pm 0.6) $\times 10^{-4}$		670	DESIG=285	
$K_S^0 (\pi^+ \pi^-)_{S\text{-wave}}$	(3.4 \pm 0.8) $\times 10^{-3}$		842	DESIG=384	
$K_S^0 f_0(980),$ $f_0(980) \rightarrow \pi^+ \pi^-$	(1.22 \pm 0.40) $\times 10^{-3}$		549	DESIG=199	
$K_S^0 f_0(1370),$ $f_0(1370) \rightarrow \pi^+ \pi^-$	(2.8 \pm 0.9) $\times 10^{-3}$		†	DESIG=201	
$K_S^0 f_2(1270),$ $f_2(1270) \rightarrow \pi^+ \pi^-$	(9 \pm 10) $\times 10^{-5}$		262	DESIG=200	
$K^*(892)^- \pi^+,$ $K^*(892)^- \rightarrow K_S^0 \pi^-$	(1.66 \pm 0.15) %		711	DESIG=81	
$K_0^*(1430)^- \pi^+,$ $K_0^*(1430)^- \rightarrow K_S^0 \pi^-$	(2.70 \pm 0.40) $\times 10^{-3}$		378	DESIG=203	
$K_2^*(1430)^- \pi^+,$ $K_2^*(1430)^- \rightarrow K_S^0 \pi^-$	(3.4 \pm 1.9) $\times 10^{-4}$		367	DESIG=286	
$K^*(1680)^- \pi^+,$ $K^*(1680)^- \rightarrow K_S^0 \pi^-$	(4 \pm 4) $\times 10^{-4}$		46	DESIG=279	
$K^*(892)^+ \pi^-,$ $K^*(892)^+ \rightarrow K_S^0 \pi^+$	[o] (1.14 \pm 0.60) $\times 10^{-4}$		711	DESIG=179	
$K_0^*(1430)^+ \pi^-,$ $K_0^*(1430)^+ \rightarrow K_S^0 \pi^+$	[o] < 1.4 $\times 10^{-5}$ CL=95% —			DESIG=382	
$K_2^*(1430)^+ \pi^-,$ $K_2^*(1430)^+ \rightarrow K_S^0 \pi^+$	[o] < 3.4 $\times 10^{-5}$ CL=95% —			DESIG=383	
$K_S^0 \pi^+ \pi^-$ nonresonant	(2.5 \pm 6.0) $\times 10^{-4}$		842	DESIG=33	
$K^- \pi^+ \pi^0$	[c] (13.9 \pm 0.5) %	S=1.7	844	DESIG=8	
$K^- \rho^+$	(10.8 \pm 0.7) %		675	DESIG=16	
$K^- \rho(1700)^+,$ $\rho(1700)^+ \rightarrow \pi^+ \pi^0$	(7.9 \pm 1.7) $\times 10^{-3}$		†	DESIG=271	
$K^*(892)^- \pi^+,$ $K^*(892)^- \rightarrow K^- \pi^0$	(2.22 \pm 0.40) %		711	DESIG=83	
$\bar{K}^*(892)^0 \pi^0,$ $\bar{K}^*(892)^0 \rightarrow K^- \pi^+$	(1.88 \pm 0.23) %		711	DESIG=82	
$K_0^*(1430)^- \pi^+,$ $K_0^*(1430)^- \rightarrow K^- \pi^0$	(4.6 \pm 2.1) $\times 10^{-3}$		378	DESIG=272	
$\bar{K}_0^*(1430)^0 \pi^0,$ $\bar{K}_0^*(1430)^0 \rightarrow K^- \pi^+$	(5.7 \pm 5.0) $\times 10^{-3}$		379	DESIG=273	
$K^*(1680)^- \pi^+,$ $K^*(1680)^- \rightarrow K^- \pi^0$	(1.8 \pm 0.7) $\times 10^{-3}$		46	DESIG=274	
$K^- \pi^+ \pi^0$ nonresonant	(1.11 \pm 0.50) %		844	DESIG=32	
$K_S^0 2\pi^0$	(9.1 \pm 1.1) $\times 10^{-3}$	S=2.2	843	DESIG=185	
$K_S^0 (2\pi^0)$ -S-wave	(2.6 \pm 0.7) $\times 10^{-3}$		—	DESIG=390	
$\bar{K}^*(892)^0 \pi^0,$ $\bar{K}^*(892)^0 \rightarrow K_S^0 \pi^0$	(7.8 \pm 0.7) $\times 10^{-3}$		711	DESIG=202	
$\bar{K}^*(1430)^0 \pi^0, \bar{K}^{*0} \rightarrow K_S^0 \pi^0$	(4 \pm 23) $\times 10^{-5}$		—	DESIG=391	

$\bar{K}^*(1680)^0 \pi^0, \bar{K}^{*0} \rightarrow K_S^0 \pi^0$	$(1.0 \pm 0.4) \times 10^{-3}$	-	DESIG=392
$K_S^0 f_2(1270), f_2 \rightarrow 2\pi^0$	$(2.3 \pm 1.1) \times 10^{-4}$	-	DESIG=393
$2K_S^0, \text{one } K_S^0 \rightarrow 2\pi^0$	$(3.2 \pm 1.1) \times 10^{-4}$	-	DESIG=394
$K^- 2\pi^+ \pi^-$	[c] $(8.08 \pm 0.21) \%$	S=1.3 813	DESIG=2
$K^- \pi^+ \rho^0 \text{ total}$	$(6.75 \pm 0.33) \%$	609	DESIG=116
$K^- \pi^+ \rho^0 \text{ 3-body}$	$(5.1 \pm 2.3) \times 10^{-3}$	609	DESIG=23
$\bar{K}^*(892)^0 \rho^0,$ $\bar{K}^*(892)^0 \rightarrow K^- \pi^+$	$(1.05 \pm 0.23) \%$	416	DESIG=86;OUR EVAL
$K^- a_1(1260)^+,$ $a_1(1260)^+ \rightarrow 2\pi^+ \pi^-$	$(3.6 \pm 0.6) \%$	327	DESIG=181;OUR EVAL
$\bar{K}^*(892)^0 \pi^+ \pi^- \text{ total},$ $\bar{K}^*(892)^0 \rightarrow K^- \pi^+$	$(1.6 \pm 0.4) \%$	685	DESIG=168;OUR EVAL
$\bar{K}^*(892)^0 \pi^+ \pi^- \text{ 3-body},$ $\bar{K}^*(892)^0 \rightarrow K^- \pi^+$	$(9.9 \pm 2.3) \times 10^{-3}$	685	DESIG=85;OUR EVAL
$K_1(1270)^- \pi^+,$ $K_1(1270)^- \rightarrow K^- \pi^+ \pi^-$	[p] $(2.9 \pm 0.3) \times 10^{-3}$	484	DESIG=182;OUR EVAL
$K^- 2\pi^+ \pi^- \text{ nonresonant}$	$(1.88 \pm 0.26) \%$	813	DESIG=68
$K_S^0 \pi^+ \pi^- \pi^0$	[q] $(5.2 \pm 0.6) \%$	813	DESIG=143
$K_S^0 \eta, \eta \rightarrow \pi^+ \pi^- \pi^0$	$(1.02 \pm 0.09) \times 10^{-3}$	772	DESIG=135;OUR EVAL
$K_S^0 \omega, \omega \rightarrow \pi^+ \pi^- \pi^0$	$(9.9 \pm 0.5) \times 10^{-3}$	670	DESIG=110;OUR EVAL
$K^- 2\pi^+ \pi^- \pi^0$	$(4.2 \pm 0.4) \%$	771	DESIG=41
$\bar{K}^*(892)^0 \pi^+ \pi^- \pi^0,$ $\bar{K}^*(892)^0 \rightarrow K^- \pi^+$	$(1.3 \pm 0.6) \%$	643	DESIG=55;OUR EVAL
$K^- \pi^+ \omega, \omega \rightarrow \pi^+ \pi^- \pi^0$	$(2.7 \pm 0.5) \%$	605	DESIG=206;OUR EVAL
$\bar{K}^*(892)^0 \omega,$ $\bar{K}^*(892)^0 \rightarrow K^- \pi^+,$ $\omega \rightarrow \pi^+ \pi^- \pi^0$	$(6.5 \pm 3.0) \times 10^{-3}$	410	DESIG=207;OUR EVAL
$K_S^0 \eta \pi^0$	$(5.5 \pm 1.1) \times 10^{-3}$	721	DESIG=292
$K_S^0 a_0(980), a_0(980) \rightarrow \eta \pi^0$	$(6.5 \pm 2.0) \times 10^{-3}$	-	DESIG=293
$\bar{K}^*(892)^0 \eta,$ $\bar{K}^*(892)^0 \rightarrow K_S^0 \pi$	$(1.6 \pm 0.5) \times 10^{-3}$	-	DESIG=294
$K_S^0 2\pi^+ 2\pi^-$	$(2.69 \pm 0.31) \times 10^{-3}$	768	DESIG=97
$K_S^0 \rho^0 \pi^+ \pi^-, \text{ no } K^*(892)^-$	$(1.1 \pm 0.7) \times 10^{-3}$	-	DESIG=174
$K^*(892)^- 2\pi^+ \pi^-,$ $K^*(892)^- \rightarrow K_S^0 \pi^-,$ $\text{no } \rho^0$	$(5 \pm 8) \times 10^{-4}$	642	DESIG=175
$K^*(892)^- \rho^0 \pi^+,$ $K^*(892)^- \rightarrow K_S^0 \pi^-$	$(1.6 \pm 0.6) \times 10^{-3}$	230	DESIG=176
$K_S^0 2\pi^+ 2\pi^- \text{ nonresonant}$	$< 1.2 \times 10^{-3}$ CL=90% 768	768	DESIG=177
$K^- 3\pi^+ 2\pi^-$	$(2.2 \pm 0.6) \times 10^{-4}$	713	DESIG=288

Fractions of many of the following modes with resonances have already appeared above as submodes of particular charged-particle modes. (Modes for which there are only upper limits and $\bar{K}^*(892)\rho$ submodes only appear below.)

CLUMP=D;NODE=S032

$K_S^0 \eta$	$(4.79 \pm 0.30) \times 10^{-3}$	772	DESIG=65
$K_S^0 \omega$	$(1.11 \pm 0.06) \%$	670	DESIG=64
$K_S^0 \eta'(958)$	$(9.4 \pm 0.5) \times 10^{-3}$	565	DESIG=187
$K^- a_1(1260)^+$	$(7.8 \pm 1.1) \%$	327	DESIG=69
$K^- a_2(1320)^+$	$< 2 \times 10^{-3}$ CL=90% 198	198	DESIG=25
$\bar{K}^*(892)^0 \pi^+ \pi^- \text{ total}$	$(2.4 \pm 0.5) \%$	685	DESIG=163
$\bar{K}^*(892)^0 \pi^+ \pi^- \text{ 3-body}$	$(1.48 \pm 0.34) \%$	685	DESIG=24
$\bar{K}^*(892)^0 \rho^0$	$(1.58 \pm 0.34) \%$	417	DESIG=22
$\bar{K}^*(892)^0 \rho^0 \text{ transverse}$	$(1.7 \pm 0.6) \%$	417	DESIG=73
$\bar{K}^*(892)^0 \rho^0 \text{ S-wave}$	$(3.0 \pm 0.6) \%$	417	DESIG=164

$\bar{K}^*(892)^0 \rho^0$ S-wave long.	< 3	$\times 10^{-3}$	CL=90%	417	DESIG=74
$\bar{K}^*(892)^0 \rho^0$ P-wave	< 3	$\times 10^{-3}$	CL=90%	417	DESIG=75
$\bar{K}^*(892)^0 \rho^0$ D-wave	(2.1 \pm 0.6) %			417	DESIG=165
$K_1(1270)^- \pi^+$	[ρ] (1.6 \pm 0.8) %			484	DESIG=70
$K_1(1400)^- \pi^+$	< 1.2 %		CL=90%	386	DESIG=72
$\bar{K}^*(892)^0 \pi^+ \pi^- \pi^0$	(1.9 \pm 0.9) %			644	DESIG=56
$K^- \pi^+ \omega$	(3.0 \pm 0.6) %			605	DESIG=197
$\bar{K}^*(892)^0 \omega$	(1.1 \pm 0.5) %			410	DESIG=57
$K^- \pi^+ \eta'(958)$	(7.5 \pm 1.9) $\times 10^{-3}$			479	DESIG=189
$\bar{K}^*(892)^0 \eta'(958)$	< 1.1 $\times 10^{-3}$	CL=90%		120	DESIG=190
Hadronic modes with three K's					
$K_S^0 K^+ K^-$	(4.47 \pm 0.34) $\times 10^{-3}$		544		NODE=S032;CLUMP=S
$K_S^0 a_0(980)^0$, $a_0^0 \rightarrow K^+ K^-$	(3.0 \pm 0.4) $\times 10^{-3}$		—		DESIG=321
$K^- a_0(980)^+$, $a_0^+ \rightarrow K^+ K_S^0$	(6.0 \pm 1.8) $\times 10^{-4}$		—		DESIG=322
$K^+ a_0(980)^-$, $a_0^- \rightarrow K^- K_S^0$	< 1.1 $\times 10^{-4}$	CL=95%	—		DESIG=323
$K_S^0 f_0(980)$, $f_0 \rightarrow K^+ K^-$	< 9 $\times 10^{-5}$	CL=95%	—		DESIG=324
$K_S^0 \phi$, $\phi \rightarrow K^+ K^-$	(2.05 \pm 0.16) $\times 10^{-3}$		520		DESIG=114
$K_S^0 f_0(1370)$, $f_0 \rightarrow K^+ K^-$	(1.7 \pm 1.1) $\times 10^{-4}$		—		DESIG=325
$3K_S^0$	(9.1 \pm 1.3) $\times 10^{-4}$		539		DESIG=58
$K^+ 2K^- \pi^+$	(2.21 \pm 0.31) $\times 10^{-4}$		434		DESIG=219
$K^+ K^- \bar{K}^*(892)^0$, $\bar{K}^*(892)^0 \rightarrow K^- \pi^+$	(4.4 \pm 1.7) $\times 10^{-5}$		†		DESIG=283
$K^- \pi^+ \phi$, $\phi \rightarrow K^+ K^-$	(4.0 \pm 1.7) $\times 10^{-5}$		422		DESIG=275
$\phi \bar{K}^*(892)^0$, $\phi \rightarrow K^+ K^-$, $\bar{K}^*(892)^0 \rightarrow K^- \pi^+$	(1.06 \pm 0.20) $\times 10^{-4}$		†		DESIG=284
$K^+ 2K^- \pi^+$ nonresonant	(3.3 \pm 1.5) $\times 10^{-5}$		434		DESIG=282
$2K_S^0 K^\pm \pi^\mp$	(6.0 \pm 1.3) $\times 10^{-4}$		427		DESIG=309
Pionic modes					
$\pi^+ \pi^-$	(1.402 \pm 0.026) $\times 10^{-3}$	S=1.1	922		NODE=S032;CLUMP=E
$2\pi^0$	(8.20 \pm 0.35) $\times 10^{-4}$		923		DESIG=173
$\pi^+ \pi^- \pi^0$	(1.43 \pm 0.06) %	S=1.9	907		DESIG=29
$\rho^+ \pi^-$	(9.8 \pm 0.4) $\times 10^{-3}$		764		DESIG=326
$\rho^0 \pi^0$	(3.72 \pm 0.22) $\times 10^{-3}$		764		DESIG=327
$\rho^- \pi^+$	(4.96 \pm 0.24) $\times 10^{-3}$		764		DESIG=328
$\rho(1450)^+ \pi^-$, $\rho(1450)^+ \rightarrow \pi^+ \pi^0$	(1.6 \pm 2.0) $\times 10^{-5}$		—		DESIG=367
$\rho(1450)^0 \pi^0$, $\rho(1450)^0 \rightarrow \pi^+ \pi^-$	(4.3 \pm 1.9) $\times 10^{-5}$		—		DESIG=368
$\rho(1450)^- \pi^+$, $\rho(1450)^- \rightarrow \pi^- \pi^0$	(2.6 \pm 0.4) $\times 10^{-4}$		—		DESIG=369
$\rho(1700)^+ \pi^-$, $\rho(1700)^+ \rightarrow \pi^+ \pi^0$	(5.9 \pm 1.4) $\times 10^{-4}$		—		DESIG=370
$\rho(1700)^0 \pi^0$, $\rho(1700)^0 \rightarrow \pi^+ \pi^-$	(7.2 \pm 1.7) $\times 10^{-4}$		—		DESIG=371
$\rho(1700)^- \pi^+$, $\rho(1700)^- \rightarrow \pi^- \pi^0$	(4.6 \pm 1.1) $\times 10^{-4}$		—		DESIG=372
$f_0(980) \pi^0$, $f_0(980) \rightarrow \pi^+ \pi^-$	(3.6 \pm 0.8) $\times 10^{-5}$		—		DESIG=330
$f_0(500) \pi^0$, $f_0(500) \rightarrow \pi^+ \pi^-$	(1.18 \pm 0.21) $\times 10^{-4}$		—		DESIG=329
$f_0(1370) \pi^0$, $f_0(1370) \rightarrow \pi^+ \pi^-$	(5.3 \pm 2.1) $\times 10^{-5}$		—		DESIG=373
$f_0(1500) \pi^0$, $f_0(1500) \rightarrow \pi^+ \pi^-$	(5.6 \pm 1.5) $\times 10^{-5}$		—		DESIG=374
$f_0(1710) \pi^0$, $f_0(1710) \rightarrow \pi^+ \pi^-$	(4.4 \pm 1.5) $\times 10^{-5}$		—		DESIG=375
$f_2(1270) \pi^0$, $f_2(1270) \rightarrow \pi^+ \pi^-$	(1.89 \pm 0.20) $\times 10^{-4}$		—		DESIG=376
$3\pi^0$ nonresonant	(1.20 \pm 0.35) $\times 10^{-4}$		907		DESIG=377
	< 3.5 $\times 10^{-4}$	CL=90%	908		DESIG=314

$2\pi^+ 2\pi^-$	$(7.42 \pm 0.21) \times 10^{-3}$	S=1.1	880	DESIG=18
$a_1(1260)^+ \pi^-$, $a_1^+ \rightarrow 2\pi^+ \pi^-$ total	$(4.45 \pm 0.31) \times 10^{-3}$		—	DESIG=348
$a_1(1260)^+ \pi^-$, $a_1^+ \rightarrow \rho^0 \pi^+$ S-wave	$(3.21 \pm 0.25) \times 10^{-3}$		—	DESIG=349
$a_1(1260)^+ \pi^-$, $a_1^+ \rightarrow \rho^0 \pi^+$ D-wave	$(1.9 \pm 0.5) \times 10^{-4}$		—	DESIG=350
$a_1(1260)^+ \pi^-$, $a_1^+ \rightarrow \sigma \pi^+$	$(6.2 \pm 0.7) \times 10^{-4}$		—	DESIG=351
$2\rho^0$ total	$(1.82 \pm 0.13) \times 10^{-3}$	518		DESIG=352
$2\rho^0$, parallel helicities	$(8.2 \pm 3.2) \times 10^{-5}$		—	DESIG=353
$2\rho^0$, perpendicular helicities	$(4.8 \pm 0.6) \times 10^{-4}$		—	DESIG=354
$2\rho^0$, longitudinal helicities	$(1.25 \pm 0.10) \times 10^{-3}$		—	DESIG=355
Resonant $(\pi^+ \pi^-) \pi^+ \pi^-$	$(1.48 \pm 0.12) \times 10^{-3}$		—	DESIG=356
3-body total				
$\sigma \pi^+ \pi^-$	$(6.1 \pm 0.9) \times 10^{-4}$		—	DESIG=357
$f_0(980) \pi^+ \pi^-$, $f_0 \rightarrow \pi^+ \pi^-$	$(1.8 \pm 0.5) \times 10^{-4}$		—	DESIG=358
$f_2(1270) \pi^+ \pi^-$, $f_2 \rightarrow \pi^+ \pi^-$	$(3.6 \pm 0.6) \times 10^{-4}$		—	DESIG=359
$\pi^+ \pi^- 2\pi^0$	$(1.00 \pm 0.09) \%$	882		DESIG=315
$\eta \pi^0$	[r] $(6.8 \pm 0.7) \times 10^{-4}$	846		DESIG=316
$\omega \pi^0$	[r] $< 2.6 \times 10^{-4}$	CL=90%	761	DESIG=317
$2\pi^+ 2\pi^- \pi^0$	$(4.1 \pm 0.5) \times 10^{-3}$	844		DESIG=95
$\eta \pi^+ \pi^-$	[r] $(1.09 \pm 0.16) \times 10^{-3}$	827		DESIG=318
$\omega \pi^+ \pi^-$	[r] $(1.6 \pm 0.5) \times 10^{-3}$	738		DESIG=319
$3\pi^+ 3\pi^-$	$(4.2 \pm 1.2) \times 10^{-4}$	795		DESIG=96
$\eta'(958) \pi^0$	$(9.0 \pm 1.4) \times 10^{-4}$	678		DESIG=378
$\eta'(958) \pi^+ \pi^-$	$(4.5 \pm 1.7) \times 10^{-4}$	650		DESIG=379
2η	$(1.67 \pm 0.20) \times 10^{-3}$	755		DESIG=380
$\eta \eta'(958)$	$(1.05 \pm 0.26) \times 10^{-3}$	537		DESIG=381

Hadronic modes with a $K\bar{K}$ pair

$K^+ K^-$	$(3.96 \pm 0.08) \times 10^{-3}$	S=1.4	791	NODE=S032;CLUMP=F DESIG=7
$2K_S^0$	$(1.7 \pm 0.4) \times 10^{-4}$	S=2.5	789	DESIG=35
$K_S^0 K^- \pi^+$	$(3.5 \pm 0.5) \times 10^{-3}$	S=1.2	739	DESIG=93
$\bar{K}^*(892)^0 K_S^0$, $\bar{K}^{*0} \rightarrow K^- \pi^+$	$< 5 \times 10^{-4}$	CL=90%	608	DESIG=91
$K_S^0 K^+ \pi^-$	$(2.1 \pm 0.4) \times 10^{-3}$	S=1.3	739	DESIG=123
$K^*(892)^0 K_S^0$, $K^{*0} \rightarrow K^+ \pi^-$	$< 1.8 \times 10^{-4}$	CL=90%	608	DESIG=124
$K^+ K^- \pi^0$	$(3.29 \pm 0.14) \times 10^{-3}$		743	DESIG=243
$K^*(892)^+ K^-$, $K^*(892)^+ \rightarrow K^+ \pi^0$	$(1.46 \pm 0.07) \times 10^{-3}$		—	DESIG=344
$K^*(892)^- K^+$, $K^*(892)^- \rightarrow K^- \pi^0$	$(5.2 \pm 0.4) \times 10^{-4}$		—	DESIG=345
$(K^+ \pi^0)_{S-wave} K^-$	$(2.34 \pm 0.17) \times 10^{-3}$		743	DESIG=364
$(K^- \pi^0)_{S-wave} K^+$	$(1.3 \pm 0.4) \times 10^{-4}$		743	DESIG=365
$f_0(980) \pi^0$, $f_0 \rightarrow K^+ K^-$	$(3.5 \pm 0.6) \times 10^{-4}$		—	DESIG=366
$\phi \pi^0$, $\phi \rightarrow K^+ K^-$	$(6.4 \pm 0.4) \times 10^{-4}$		—	DESIG=346
$2K_S^0 \pi^0$	$< 5.9 \times 10^{-4}$		740	DESIG=242
$K^+ K^- \pi^+ \pi^-$	$(2.43 \pm 0.12) \times 10^{-3}$		677	DESIG=63
$\phi(\pi^+ \pi^-)_{S-wave}$, $\phi \rightarrow K^+ K^-$	$(2.50 \pm 0.33) \times 10^{-4}$		614	DESIG=115
$(\phi \rho^0)_{S-wave}$, $\phi \rightarrow K^+ K^-$	$(9.3 \pm 1.2) \times 10^{-4}$		250	DESIG=134
$(\phi \rho^0)_{D-wave}$, $\phi \rightarrow K^+ K^-$	$(8.3 \pm 2.3) \times 10^{-5}$		—	DESIG=395
$(K^{*0} \bar{K}^{*0})_{S-wave}$, $K^{*0} \rightarrow K^\pm \pi^\mp$	$(1.48 \pm 0.30) \times 10^{-4}$		—	DESIG=396

$(K^-\pi^+)_{P-wave},$	$(2.6 \pm 0.5) \times 10^{-4}$	-	DESIG=397		
$(K^+\pi^-)_{S-wave},$					
$K_1(1270)^+ K^-,$	$(1.8 \pm 0.5) \times 10^{-4}$	-	DESIG=398		
$K_1(1270)^+ \rightarrow K^{*0}\pi^+$					
$K_1(1270)^+ K^-,$	$(1.14 \pm 0.26) \times 10^{-4}$	-	DESIG=399		
$K_1(1270)^+ \rightarrow \rho^0 K^+$					
$K_1(1270)^- K^+,$	$(2.2 \pm 1.2) \times 10^{-5}$	-	DESIG=400		
$K_1(1270)^- \rightarrow \bar{K}^{*0}\pi^-$					
$K_1(1270)^- K^+,$	$(1.46 \pm 0.25) \times 10^{-4}$	-	DESIG=401		
$K_1(1270)^- \rightarrow \rho^0 K^-$					
$K^*(1410)^+ K^-,$	$(1.02 \pm 0.26) \times 10^{-4}$	-	DESIG=402		
$K^*(1410)^+ \rightarrow K^{*0}\pi^+$					
$K^*(1410)^- K^+,$	$(1.14 \pm 0.25) \times 10^{-4}$	-	DESIG=403		
$K^*(1410)^- \rightarrow \bar{K}^{*0}\pi^-$					
$2K_S^0\pi^+\pi^-$	$(1.23 \pm 0.24) \times 10^{-3}$	673	DESIG=215		
$K_S^0 K^- 2\pi^+\pi^-$	$< 1.5 \times 10^{-4}$	CL=90%	595	DESIG=178	
$K^+ K^- \pi^+\pi^-\pi^0$	$(3.1 \pm 2.0) \times 10^{-3}$	600	DESIG=131		
 Other $K\bar{K}X$ modes. They include all decay modes of the ϕ , η , and ω .					
$\phi\eta$	$(1.4 \pm 0.5) \times 10^{-4}$	489	DESIG=213		
$\phi\omega$	$< 2.1 \times 10^{-3}$	CL=90%	238	DESIG=214	
 Radiative modes					
$\rho^0\gamma$	$< 2.4 \times 10^{-4}$	CL=90%	771	DESIG=245	
$\omega\gamma$	$< 2.4 \times 10^{-4}$	CL=90%	768	DESIG=246	
$\phi\gamma$	$(2.70 \pm 0.35) \times 10^{-5}$	654	DESIG=247		
$K^*(892)^0\gamma$	$(3.27 \pm 0.34) \times 10^{-4}$	719	DESIG=248		
 Doubly Cabibbo suppressed (DC) modes or $\Delta C = 2$ forbidden via mixing (C2M) modes					
NODE=S032;CLUMP=T					
$K^+\ell^-\bar{\nu}_\ell$ via \bar{D}^0	$< 2.2 \times 10^{-5}$	CL=90%	-	DESIG=241;OUR EVAL	
K^+ or $K^*(892)^+ e^-\bar{\nu}_e$ via \bar{D}^0	$< 6 \times 10^{-5}$	CL=90%	-	DESIG=311;OUR EVAL	
$K^+\pi^-$	DC	$(1.47 \pm 0.07) \times 10^{-4}$	S=2.8	861	DESIG=50
$K^+\pi^-$ via DCS		$(1.31 \pm 0.08) \times 10^{-4}$	-	DESIG=362	
$K^+\pi^-$ via \bar{D}^0		$< 1.6 \times 10^{-5}$	CL=95%	861	DESIG=6
$K_S^0\pi^+\pi^-$ in $D^0 \rightarrow \bar{D}^0$		$< 1.8 \times 10^{-4}$	CL=95%	-	DESIG=339
$K^*(892)^+\pi^-$,	DC	$(1.14 \pm 0.60) \times 10^{-4}$		711	DESIG=287;OUR EVAL
$K^*(892)^+ \rightarrow K_S^0\pi^+$					
$K_0^*(1430)^+\pi^-$,	DC	$< 1.4 \times 10^{-5}$		-	DESIG=385;OUR EVAL
$K_0^*(1430)^+ \rightarrow K_S^0\pi^+$					
$K_2^*(1430)^+\pi^-$,	DC	$< 3.4 \times 10^{-5}$		-	DESIG=386;OUR EVAL
$K_2^*(1430)^+ \rightarrow K_S^0\pi^+$					
$K^+\pi^-\pi^0$	DC	$(3.04 \pm 0.17) \times 10^{-4}$		844	DESIG=277
$K^+\pi^-\pi^0$ via \bar{D}^0		$(7.3 \pm 0.5) \times 10^{-4}$	-		DESIG=343
$K^+\pi^+2\pi^-$	DC	$(2.62 \pm 0.21) \times 10^{-4}$		813	DESIG=51
$K^+\pi^+2\pi^-$ via \bar{D}^0		$< 4 \times 10^{-4}$	CL=90%	812	DESIG=222
μ^- anything via \bar{D}^0		$< 4 \times 10^{-4}$	CL=90%	-	DESIG=26
 $\Delta C = 1$ weak neutral current (C1) modes, Lepton Family number (LF) violating modes, Lepton (L) or Baryon (B) number violating modes					
NODE=S032;CLUMP=H					
$\gamma\gamma$	C1	$< 2.2 \times 10^{-6}$	CL=90%	932	DESIG=45
e^+e^-	C1	$< 7.9 \times 10^{-8}$	CL=90%	932	DESIG=39
$\mu^+\mu^-$	C1	$< 1.4 \times 10^{-7}$	CL=90%	926	DESIG=28
$\pi^0e^+e^-$	C1	$< 4.5 \times 10^{-5}$	CL=90%	928	DESIG=225
$\pi^0\mu^+\mu^-$	C1	$< 1.8 \times 10^{-4}$	CL=90%	915	DESIG=216
ηe^+e^-	C1	$< 1.1 \times 10^{-4}$	CL=90%	852	DESIG=226
$\eta\mu^+\mu^-$	C1	$< 5.3 \times 10^{-4}$	CL=90%	838	DESIG=227
$\pi^+\pi^-e^+e^-$	C1	$< 3.73 \times 10^{-4}$	CL=90%	922	DESIG=262

$\rho^0 e^+ e^-$	<i>C1</i>	< 1.0	$\times 10^{-4}$	CL=90%	771	DESIG=52
$\pi^+ \pi^- \mu^+ \mu^-$	<i>C1</i>	< 3.0	$\times 10^{-5}$	CL=90%	894	DESIG=263
$\rho^0 \mu^+ \mu^-$	<i>C1</i>	< 2.2	$\times 10^{-5}$	CL=90%	754	DESIG=53
$\omega e^+ e^-$	<i>C1</i>	< 1.8	$\times 10^{-4}$	CL=90%	768	DESIG=228
$\omega \mu^+ \mu^-$	<i>C1</i>	< 8.3	$\times 10^{-4}$	CL=90%	751	DESIG=229
$K^- K^+ e^+ e^-$	<i>C1</i>	< 3.15	$\times 10^{-4}$	CL=90%	791	DESIG=266
$\phi e^+ e^-$	<i>C1</i>	< 5.2	$\times 10^{-5}$	CL=90%	654	DESIG=230
$K^- K^+ \mu^+ \mu^-$	<i>C1</i>	< 3.3	$\times 10^{-5}$	CL=90%	710	DESIG=267
$\phi \mu^+ \mu^-$	<i>C1</i>	< 3.1	$\times 10^{-5}$	CL=90%	631	DESIG=231
$\bar{K}^0 e^+ e^-$	[<i>h</i>]	< 1.1	$\times 10^{-4}$	CL=90%	866	DESIG=67
$\bar{K}^0 \mu^+ \mu^-$	[<i>h</i>]	< 2.6	$\times 10^{-4}$	CL=90%	852	DESIG=217
$K^- \pi^+ e^+ e^-$	<i>C1</i>	< 3.85	$\times 10^{-4}$	CL=90%	861	DESIG=264
$\bar{K}^*(892)^0 e^+ e^-$	[<i>h</i>]	< 4.7	$\times 10^{-5}$	CL=90%	719	DESIG=232
$K^- \pi^+ \mu^+ \mu^-$	<i>C1</i>	< 3.59	$\times 10^{-4}$	CL=90%	829	DESIG=265
$\bar{K}^*(892)^0 \mu^+ \mu^-$	[<i>h</i>]	< 2.4	$\times 10^{-5}$	CL=90%	700	DESIG=233
$\pi^+ \pi^- \pi^0 \mu^+ \mu^-$	<i>C1</i>	< 8.1	$\times 10^{-4}$	CL=90%	863	DESIG=218
$\mu^\pm e^\mp$	<i>LF</i>	[<i>s</i>] < 2.6	$\times 10^{-7}$	CL=90%	929	DESIG=40
$\pi^0 e^\pm \mu^\mp$	<i>LF</i>	[<i>s</i>] < 8.6	$\times 10^{-5}$	CL=90%	924	DESIG=234
$\eta e^\pm \mu^\mp$	<i>LF</i>	[<i>s</i>] < 1.0	$\times 10^{-4}$	CL=90%	848	DESIG=235
$\pi^+ \pi^- e^\pm \mu^\mp$	<i>LF</i>	[<i>s</i>] < 1.5	$\times 10^{-5}$	CL=90%	911	DESIG=268
$\rho^0 e^\pm \mu^\mp$	<i>LF</i>	[<i>s</i>] < 4.9	$\times 10^{-5}$	CL=90%	767	DESIG=236
$\omega e^\pm \mu^\mp$	<i>LF</i>	[<i>s</i>] < 1.2	$\times 10^{-4}$	CL=90%	764	DESIG=237
$K^- K^+ e^\pm \mu^\mp$	<i>LF</i>	[<i>s</i>] < 1.8	$\times 10^{-4}$	CL=90%	754	DESIG=270
$\phi e^\pm \mu^\mp$	<i>LF</i>	[<i>s</i>] < 3.4	$\times 10^{-5}$	CL=90%	648	DESIG=238
$\bar{K}^0 e^\pm \mu^\mp$	<i>LF</i>	[<i>s</i>] < 1.0	$\times 10^{-4}$	CL=90%	863	DESIG=239
$K^- \pi^+ e^\pm \mu^\mp$	<i>LF</i>	[<i>s</i>] < 5.53	$\times 10^{-4}$	CL=90%	848	DESIG=269
$\bar{K}^*(892)^0 e^\pm \mu^\mp$	<i>LF</i>	[<i>s</i>] < 8.3	$\times 10^{-5}$	CL=90%	714	DESIG=240
$2\pi^- 2e^+ + \text{c.c.}$	<i>L</i>	< 1.12	$\times 10^{-4}$	CL=90%	922	DESIG=253
$2\pi^- 2\mu^+ + \text{c.c.}$	<i>L</i>	< 2.9	$\times 10^{-5}$	CL=90%	894	DESIG=254
$K^- \pi^- 2e^+ + \text{c.c.}$	<i>L</i>	< 2.06	$\times 10^{-4}$	CL=90%	861	DESIG=255
$K^- \pi^- 2\mu^+ + \text{c.c.}$	<i>L</i>	< 3.9	$\times 10^{-4}$	CL=90%	829	DESIG=256
$2K^- 2e^+ + \text{c.c.}$	<i>L</i>	< 1.52	$\times 10^{-4}$	CL=90%	791	DESIG=257
$2K^- 2\mu^+ + \text{c.c.}$	<i>L</i>	< 9.4	$\times 10^{-5}$	CL=90%	710	DESIG=258
$\pi^- \pi^- e^+ \mu^+ + \text{c.c.}$	<i>L</i>	< 7.9	$\times 10^{-5}$	CL=90%	911	DESIG=259
$K^- \pi^- e^+ \mu^+ + \text{c.c.}$	<i>L</i>	< 2.18	$\times 10^{-4}$	CL=90%	848	DESIG=260
$2K^- e^+ \mu^+ + \text{c.c.}$	<i>L</i>	< 5.7	$\times 10^{-5}$	CL=90%	754	DESIG=261
$p e^-$	<i>L,B</i>	[<i>t</i>] < 1.0	$\times 10^{-5}$	CL=90%	696	DESIG=387
$\bar{p} e^+$	<i>L,B</i>	[<i>u</i>] < 1.1	$\times 10^{-5}$	CL=90%	696	DESIG=388

D*(2007)⁰

$$I(J^P) = \frac{1}{2}(1^-)$$

I, J, P need confirmation.

NODE=M061

Mass $m = 2006.99 \pm 0.15$ MeV $m_{D^{*0}} - m_{D^0} = 142.12 \pm 0.07$ MeVFull width $\Gamma < 2.1$ MeV, CL = 90% $\bar{D}^*(2007)^0$ modes are charge conjugates of modes below.

NODE=M061M;DTYPE=M

NODE=M061DM;DTYPE=D

NODE=M061W;DTYPE=G

NODE=M061220;NODE=M061

D*(2007)⁰ DECAY MODESFraction (Γ_i/Γ) ρ (MeV/c)

$D^0 \pi^0$	(61.9 \pm 2.9) %	43	DESIG=1
$D^0 \gamma$	(38.1 \pm 2.9) %	137	DESIG=2

D*(2010) \pm

$$I(J^P) = \frac{1}{2}(1^\pm)$$

I, J, P need confirmation.

NODE=M062

Mass $m = 2010.29 \pm 0.13$ MeV $m_{D^*(2010)^+} - m_{D^+} = 140.66 \pm 0.10$ MeV (S = 1.1) $m_{D^*(2010)^-} - m_{D^0} = 145.421 \pm 0.010$ MeV (S = 1.1)Full width $\Gamma = 96 \pm 22$ keV

NODE=M062M;DTYPE=M

NODE=M062MD;DTYPE=D

NODE=M062DM;DTYPE=G

NODE=M062W;DTYPE=G

$D^*(2010)^-$ modes are charge conjugates of the modes below.

NODE=M062225;NODE=M062

$D^*(2010)^\pm$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$D^0\pi^+$	(67.7±0.5) %	39
$D^+\pi^0$	(30.7±0.5) %	38
$D^+\gamma$	(1.6±0.4) %	136

$D_0^*(2400)^0$

$$I(J^P) = \frac{1}{2}(0^+)$$

Mass $m = 2318 \pm 29$ MeV (S = 1.7)

Full width $\Gamma = 267 \pm 40$ MeV

NODE=M178

NODE=M178M;DTYPE=M

NODE=M178W;DTYPE=G

$D_0^*(2400)^0$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$D^+\pi^-$	seen	385

$D_1(2420)^0$

$$I(J^P) = \frac{1}{2}(1^+)$$

I needs confirmation.

Mass $m = 2421.4 \pm 0.6$ MeV (S = 1.2)

$m_{D_1^0} - m_{D^{*+}} = 411.1 \pm 0.6$ (S = 1.2)

Full width $\Gamma = 27.4 \pm 2.5$ MeV (S = 2.3)

NODE=M097

NODE=M097M;DTYPE=M

NODE=M097DM;DTYPE=D

NODE=M097W;DTYPE=G

NODE=M097215;NODE=M097

$D_1(2420)^0$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$D^*(2010)^+\pi^-$	seen	354
$D^0\pi^+\pi^-$	seen	425
$D^+\pi^-$	not seen	473
$D^{*0}\pi^+\pi^-$	not seen	280

$D_2^*(2460)^0$

$$I(J^P) = \frac{1}{2}(2^+)$$

$J^P = 2^+$ assignment strongly favored.

Mass $m = 2462.6 \pm 0.6$ MeV (S = 1.2)

$m_{D_2^{*0}} - m_{D^+} = 593.0 \pm 0.6$ MeV (S = 1.3)

$m_{D_2^{*0}} - m_{D^{*+}} = 452.3 \pm 0.6$ MeV (S = 1.3)

Full width $\Gamma = 49.0 \pm 1.3$ MeV (S = 1.5)

DESIG=1

DESIG=3;OUR EST;→ UNCHECKED ←

DESIG=2;OUR EST;→ UNCHECKED ←

DESIG=7;OUR EST;→ UNCHECKED ←

NODE=M119

NODE=M119M;DTYPE=M

NODE=M119DM;DTYPE=D

NODE=M119DM2;DTYPE=D

NODE=M119W;DTYPE=G

NODE=M119215;NODE=M119

$D_2^*(2460)^0$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$D^+\pi^-$	seen	507
$D^*(2010)^+\pi^-$	seen	391
$D^0\pi^+\pi^-$	not seen	463
$D^{*0}\pi^+\pi^-$	not seen	326

$D_2^*(2460)^\pm$

$$I(J^P) = \frac{1}{2}(2^+)$$

$J^P = 2^+$ assignment strongly favored.

Mass $m = 2464.3 \pm 1.6$ MeV (S = 1.7)

$m_{D_2^*(2460)^\pm} - m_{D_2^*(2460)^0} = 2.4 \pm 1.7$ MeV

Full width $\Gamma = 37 \pm 6$ MeV (S = 1.4)

CLUMP=A;DESIG=1

DESIG=2

DESIG=3;OUR EST;→ UNCHECKED ←

DESIG=4;OUR EST;→ UNCHECKED ←

NODE=M150

NODE=M150M;DTYPE=M

NODE=M150DM;DTYPE=D

NODE=M150W;DTYPE=G

$D_2^*(2460)^-$ modes are charge conjugates of modes below.

NODE=M150215;NODE=M150

$D_2^*(2460)^\pm$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$D^0\pi^+$	seen	512
$D^{*0}\pi^+$	seen	395
$D^+\pi^+\pi^-$	not seen	461
$D^{*+}\pi^+\pi^-$	not seen	324

NOTES

- [a] This result applies to $Z^0 \rightarrow c\bar{c}$ decays only. Here ℓ^+ is an average (not a sum) of e^+ and μ^+ decays.
- [b] See the Particle Listings for the (complicated) definition of this quantity.
- [c] The branching fraction for this mode may differ from the sum of the submodes that contribute to it, due to interference effects. See the relevant papers in the Particle Listings.
- [d] These subfractions of the $K^-2\pi^+$ mode are uncertain: see the Particle Listings.
- [e] Submodes of the $D^+ \rightarrow K^-2\pi^+\pi^0$ and $K_S^02\pi^+\pi^-$ modes were studied by ANJOS 92C and COFFMAN 92B, but with at most 142 events for the first mode and 229 for the second – not enough for precise results. With nothing new for 18 years, we refer to our 2008 edition, Physics Letters **B667** 1 (2008), for those results.
- [f] The unseen decay modes of the resonances are included.
- [g] This is *not* a test for the $\Delta C=1$ weak neutral current, but leads to the $\pi^+\ell^+\ell^-$ final state.
- [h] This mode is not a useful test for a $\Delta C=1$ weak neutral current because both quarks must change flavor in this decay.
- [i] In the 2010 Review, the values for these quantities were given using a measure of the asymmetry that was inconsistent with the usual definition.
- [j] This value is obtained by subtracting the branching fractions for 2-, 4- and 6-prongs from unity.
- [k] This is the sum of our $K^-2\pi^+\pi^-$, $K^-2\pi^+\pi^-\pi^0$, $\bar{K}^02\pi^+2\pi^-$, $K^+2K^-\pi^+$, $2\pi^+2\pi^-$, $2\pi^+2\pi^-\pi^0$, $K^+K^-\pi^+\pi^-$, and $K^+K^-\pi^+\pi^-\pi^0$, branching fractions.
- [l] This is the sum of our $K^-3\pi^+2\pi^-$ and $3\pi^+3\pi^-$ branching fractions.
- [n] The branching fractions for the $K^-e^+\nu_e$, $K^*(892)^-e^+\nu_e$, $\pi^-e^+\nu_e$, and $\rho^-e^+\nu_e$ modes add up to $6.19 \pm 0.17\%$.
- [o] This is a doubly Cabibbo-suppressed mode.
- [p] The two experiments measuring this fraction are in serious disagreement. See the Particle Listings.
- [q] Submodes of the $D^0 \rightarrow K_S^0\pi^+\pi^-\pi^0$ mode with a K^* and/or ρ were studied by COFFMAN 92B, but with only 140 events. With nothing new for 18 years, we refer to our 2008 edition, Physics Letters **B667** 1 (2008), for those results.
- [r] This branching fraction includes all the decay modes of the resonance in the final state.
- [s] The value is for the sum of the charge states or particle/antiparticle states indicated.
- [t] This limit is for either D^0 or \bar{D}^0 to pe^- .
- [u] This limit is for either D^0 or \bar{D}^0 to $\bar{p}e^+$.

DESIG=1
DESIG=2;OUR EST; \rightarrow UNCHECKED \leftarrow
DESIG=3;OUR EST; \rightarrow UNCHECKED \leftarrow
DESIG=4;OUR EST; \rightarrow UNCHECKED \leftarrow

LINKAGE=DZC

LINKAGE=DEF

LINKAGE=SDQ

LINKAGE=UNC

LINKAGE=S08

LINKAGE=UDM

LINKAGE=NTC

LINKAGE=FIX

LINKAGE=MVL

LINKAGE=TP0

LINKAGE=TP4

LINKAGE=TP6

LINKAGE=EAN

LINKAGE=DCS

LINKAGE=NF

LINKAGE=DKP

LINKAGE=ADC

LINKAGE=SG

LINKAGE=DPE

LINKAGE=PEP